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SODIUM BENZOATE IN THE TREATMENT OF INFLUENZA.*

BY HERMAN B. SHEFFIELD, M. D., NEW YORK.

Influenza is an acute infectious and contagious epidemic and sporadic disease due to Pfeiffer's Bacillus. It is characterized by a group of inflammatory symptoms of the respiratory, digestive and nervous systems, severe prostration and a marked tendency to complications and sequelæ. It is transmitted through the air as well as communicable from one person to another, thus resembling in this particular variola and scarlatina, and, therefore, like these, demanding the same precautions towards its prevention. I am at a loss to understand why such signal interest is being taken by the health authorities in the prevention of such mild ailments as measles or even chicken-pox, and none at all in the spreading of influ-

enza. To be sure, the complications and sequelæ of the latter by far excel those of the former in severity as well as multiplicity, and looking at the appalling mortality of influenza there is every reason to anxiously adopt preventive means which will stay its ravages. Indeed, carrying my reasoning into action, I frequently succeeded in confining the disease to a single member of large families, and the fact that in an orphan asylum of over eight hundred children the disease was limited to but forty-nine, speaks well for the efficiency of such prophylaxis. Outside of strict isolation, we must insist also upon observance of the general hygienic rules; and as the maintenance of a high state of health is Nature's preventive, the appearance of any respiratory or digestive dis-

* Author's original abstract.

turbances during an epidemic of influenza must be remedied at once. Careless exposure to atmospheric changes and grippal surroundings must be avoided. The early prostration calls for wholesome, nutritious and easily digestible diet. Beef tea or the expressed juice of meat, milk and farinaceous food must be given in small quantities and frequently repeated. In cases of intolerance, predigested foods must be resorted to, and where vomiting is pronounced nutrient enemata are indicated.

The active treatment is chiefly symptomatic. Numerous drugs have been lauded as specifics; there are, however, but few worthy of trial. Antipyretics in the form of coal tar products are certainly of great value, as they simultaneously reduce temperature, relieve pain and allay nervous irritation, and dispense to a great extent with morphine preparations. Sodium salicylate, salol and quinine answer well in many cases. There is one drug which, in my experience, acts almost as a specific in influenza, and has so far not received deserving attention. I am referring to sodium benzoate. In 1857 Dr. Soquet and Dr. Bonjean (1) recommended this drug in gout and rheumatism; since then various experiments have been made with it which have proved its value as an antiseptic, antipyretic, antirheumatic, diaphoretic, diuretic and expectorant. Dr. Rokitsky (2) and Dr. Schuler (3), for instance, were very enthusiastic over its effects in arresting and curing phthisis pulmonalis. Dr. Letzerich (4), Dr. Demme (5) and Dr. Tordeus (6) praised it highly in diphtheria, scarlatina and whooping cough. Dr. Virchow (7) and Dr. Senator (8) found it very serviceable in rheumatism, lithæmia and cystitis. According to Dr. Bartholow (9), so-

dium benzoate has lately occupied a large place in professional attention. Having similar antiseptic and antipyretic properties to those of salicylate of sodium, and being without any injurious effect, it came to be largely used in the septic maladies. In eruptive fevers, in typhoid and malarial fevers, this salt is preferable to the salicylate. Dr. Potter (10) and Dr. Shoemaker (11) agree as to Dr. Bartholow's observations, and Dr. Shoemaker adds that sodium benzoate exerts a stimulating effect upon the liver and works well in diarrhoea and dysentery. It may thus be seen that we possess in sodium benzoate a remedial agent capable of meeting most, if not all, indications in the treatment of influenza.

The writer's experience with this drug began five years ago, when a child with a severe attack of acute articular rheumatism was rapidly cured with sodium benzoate and salol. Encouraged also by the fact that large doses are well borne by children, I decided to employ it in influenza, an epidemic prevailing about that time. The results were exceedingly satisfactory, most of the symptoms having subsided within forty-eight hours. Since then sodium benzoate has formed my remedy, not alone in influenza but in all its complications as well. Occasionally it is found necessary to administer small doses of acetanilide for reduction of high temperature, and relief of pain, and when the latter is severe, also a little codeine. I may state that after having giving acetanilide to thousands of patients in diverse diseases, I have yet to see any untoward results following its use, provided proper caution is taken in prescribing a moderate dose. Where any depression is to be feared a small dose of caffeine is a safe addi-

tion. Whenever "rheumatoid" pains predominate I combine the just mentioned drugs with salol, which acts at the same time as an intestinal antiseptic. Thus, when I am called upon to treat a case of the *grippe* of moderate severity, I order the following tablet :*

R. Sodium Benzoate.

Salol.

Acetanilid, of each gr. $1\frac{1}{2}$.

Caffeine, gr. $\frac{1}{4}$.

Sig.—One tablet, crushed to a powder if preferable, every three hours to a child six years old, or three tablets to an adult.

Whenever the pain is especially acute and insomnia prevails, I add a small dose of codeine sulphate in the following manner :

R. Sodium Benzoate.

Salol.

Acetanilid, of each gr. $1\frac{1}{2}$.

Caffeine, gr. $\frac{1}{4}$.

Codeine Sulph. gr. 1-12.

Sig. as above.

In little children who refuse taking powders I prescribe the following mixture, again adding codeine if necessary :

R. Sodii Benzoate, } each $\frac{1}{2}$ drachm.
Antipyrin., }

Liquor ammon. anisat., } each

Syr. scillæ., comp., } 2 drachms.

Syr. althææ, $1\frac{1}{2}$ fluid ounces.

Aquæ anisi, q. s. ad. 2 fluid ounces.

M. Sig.: One drachm every three hours to a child six years old.

In connection with sodium benzoate by the mouth I always direct the inhalation of compound tincture of benzoin, which acts as an admirable respiratory antiseptic, expectorant and antispasmodic. One tablespoonful of the tincture is added to a quart of boiling water in a tea kettle or tin basin and maintained in a state of constant simmering over a gas or alcohol lamp during the entire sickness. Occasionally a hot flaxseed poultice and expectorants are indicated. Where di-

gestive disturbance is predominating, small doses of calomel and ingluvin form a useful combination. Nervous phenomena, such as extreme irritability and convulsions in children, usually yield promptly to the administration of sodium bromide and chloral, although under the sodium benzoate treatment I had but few cases requiring nerve sedatives or hypnotics. By far the more important is the remedying of the characteristic prostrations, and I found that small doses of strychnine sulphate and the diverse ammonia preparations were most useful. If the cough is very protracted, I order minute doses of creosote with glycerin, alcohol and a pleasant adjuvant. Special attention must be paid to the prevention of complications, be they grave or mild, and it must be remembered that it is the attention to the comparatively little things that renders an attack of influenza devoid of danger.

I may finally add that under the method of treatment just described I lost but four patients out of nearly two hundred. Considering this low mortality with the extreme death rate (10-20 per cent.) recorded by others, I am tempted to attribute this most fortunate result to the administration of the sodium benzoate and the enforcement of all the suggestions enumerated in this paper.

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5 Mitchell Place, E. 49th st., New York

* Upon my special request these tablets were prepared for me by John Wyeth & Brother, of Philadelphia, whose kindness in supplying the tablets during my experiments I herewith acknowledge with thanks.

EDUCATIONAL AND LEGISLATIVE CONTROL OF TUBERCULOSIS. *

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The idea that a known (?) disease like tuberculosis springs from the evolution or rather dissolution of the forces which have to do with our being, that it is an evidence of the variation of the law of harmony to environment, a retrograde movement toward dissolution and death; this idea, I say of a basic law of degeneracy, which finds its chief expression in this wasting disease, is too profound to be easily grasped, too adverse to our set habits of thought to be easily accepted. Therefore, if I fail to convince the reader in a necessarily curtailed presentation of proof, let me suggest that he simply suspend judgment till the opportunity happily occurs for him to study John Fiske's "Outlines of Cosmic Philosophy," especially the interesting chapters on "Matter, Motion and Force;" "Rhythm;" "Evolution and Dissolution" and "Sources of Terrestrial Energy." Then, I think, he will come to the conclusions here reached and have a clearer understanding of the matter.

There is a deeper and more fundamental source of knowledge than that which the microscope with its wonderful delineation and detail can supply, and the liability of being side-tracked by that instrument's findings should be recognized, that they may not fail to grasp the true origin and evolution of our degenerative diseases.

* Read before the American Climatological Association, Washington, D. C., May 1900. Abstracted from the Journal of the American Medical Association.

An important fact in evolution is that, all the way up to man, the beings involved have had no voice, save instinct, in deciding their destiny. With the advent of man, however, something was added to the law of the survival of the fittest, that is, a deciding brain. This higher order of life—the soul of man with its God-like attributes—involves not only equivalent responsibility but the liability to mistakes because of that responsibility. I am not a preacher to expound and lament man's moral errors, but of all his physical ills, the profoundest and most far-reaching mistake which we now have to analyze is known through its results in tuberculosis, the lately termed "white scourge" of the race.

Let us try to free our minds from preconceived beliefs, and, rising above the details of bacillary evidence, attempt to determine how far man himself is to blame for his miseries, and then endeavor to learn how the punishment of this scourge is as it should be in the Divine order of our creation and our evolution. Thus we may come to realize that tuberculosis springs from the mistaken adaptation of man to his environment, i. e., is chiefly due to the faulty civilization of the present time.

The instinct of the Rocky Mountain beaver teaches him to build his winter hut in conformity to his environment, and wonderfully so with regard to the severity or mildness of the approaching season. A shrewd weather prophet interprets these findings and prognosti-

cates the future for his fellow-men. Who will prognosticate the probabilities of life and death from the character of our own habitations? Are they a healthy outgrowth of man's conformity to his environment? No, it is right here, as I hope to show, that the greatest nonconformity lies. The question of the suitability of man's abode and life to his highest development may be studied better through the subject of ventilation than in any other way.

There was a man in our town who was much annoyed by the constant dinging of a piano in an adjoining apartment of his lodging-house. So he rigged up a gong run by electricity and his improvised music was made to accompany the piano until the latter stopped. If an automatic ventilator could be invented, built into a window pane or into the outside walls of a room, which would sound a gong whenever ventilation was imperfect—by reason of excess of carbonic acid or any organic impurity above an established healthy standard—and if such a device could be used in all living-rooms, there would be so much noise in every town that nothing else could be heard. The racket would probably bring relief in perfect ventilation, and the readjustment of the hearing organs to suit this noisy environment would be accompanied or rather attended by a great decrease in the degeneration which induces tuberculosis. The reward for the successful inventor of such an automatic ventilator should be great, for the good results would be almost inestimable. A visual index of atmospheric purity and impurity might be substituted for an alarm or gong.

This would not be a more wonderful discovery than many that have been made of late, as, for instance, the thermostat or heat regulator, which

automatically controls the heat of a building within one degree of a desired point, but what a salutary correction it would be of the defects of our living-rooms! Let us take an average living-room, fourteen feet square and ten feet high, with one door and two windows—the usual condition. In such a room half a dozen may sleep or one person may occupy a room of three or four times this space. This 2000 cubic feet represents about the average of the hundred thousand living rooms that are in a city of that population. The total window-space is one-half covered with curtain, and as the sun can shine into only one side of a house at a time, and as one-half the time he is usually shut out by clouds, little of the sun's direct rays can get into this average room. This room also has no fireplace, the door is shut nine-tenths of the time, and the windows are not open one-tenth of their area for one-tenth of the time.

This room has been evolved in the progress, and is one of the results of our civilization. We must admit its necessity because it is here; but the evolution of its ventilation is as yet an unsolved problem to over 90 per cent. of humanity.

What then is sufficient ventilation for the maintenance of health? It is not merely that the carbonic acid which is thrown off from the lungs shall be replaced by its equivalent of oxygen from the outer air. So perfect are the joints the builders make, in this day of advanced art in architecture, that a guest-room, although aired and then unused for weeks, may need ventilating again before a new occupant enters, because it has lost the natural qualities of the out-door air.

A man exhales 400 volumes of carbonic acid to every two to four volumes he inhales; he must then have

4000 cubic feet of air an hour, according to Parks, and 1800 according to Briggs, lest the carbonic acid in a room exceed six to 10,000 and eight to 10,000 parts respectively, which these investigators respectively considered to be the limits beyond which impurity should not be allowed to go. It is estimated that two candles give off as much carbonic acid as does one man, a lamp as much as two men, and an ordinary gas burner as much as do nearly six men: so, in addition, these sources of impurity must be considered. Ventilation necessitates the recognition of the fact also, based on the consumption of a pound of coal per hour, that for heating a room 2072 cubic feet of air will be required for fourteen hours in the day. A thorough knowledge of ventilation necessitates, likewise, an appreciation of the various activities of persons in a room; also of the extra equivalent space in a room needed to offset the rarefaction of the air at great altitudes; also the estimation of various diseased states—as when, during fever, additional poisons are thrown off into the air—and also the determination of the chemical and organic changes which takes place in laboratories and workshops.

Although all these are important, there is still something more needed to secure perfect ventilation. It is my purpose to show not only that the air-change in a room of this size is inadequate, but that there are other faults about this room, even were it twice as large, which seem not to have been generally, if not all recognized. This will be plain when we consider the life of the air. We will see that there is a vitalizing principle whose force is annulled by the imprisonment of the air through defective ventilation.

How shall we express our conception of this vitalizing principle so that

we may recognize its dissolution under absence of ventilation? We might do this had we some simpler way of giving to the sun its due credit as the source of all the heat, light and motion of life manifested on the earth than has Fiske, who says: "The difference between the tropical heat of India and the cold of the Arctic regions is simply the measure of untold millions of tiny differences in the rates of oscillation of countless atoms of atmospheric gases, determined in turn by innumerable oscillatory movements propagated from the sun to the earth."

The life of the air exists chiefly in its motion, which, with its light, heat and electric or magnetic power, comes from the sun. If the absence of this life—here denominated as "dead air"—is represented as a perpendicular line, and "live air" is represented as another straight line at right angles thereto, then the gradations from live air to dead, under the subtle influences in which we human beings live and die, can be truthfully represented as a curved line which gradually leaves the horizontal line and comes down to the perpendicular. This deficient ventilation curve is not the same, but is much like Angus Smith's curved line which indicates, at times, the measure of the light of a candle when gradually extinguished by being confined in a closed space.

This receding flame can be fanned into life by opening a window, but let the previous stillness continue and the perpendicular line of extinguishment is surely reached. I wish to call attention to the important fact of the proportionate and gradual loss of light, and by it to illustrate the proportionate loss of vitality in a degenerative disease. Both these losses are so gradual in the beginning that they are unrecognized. The line of life of the hu-

man being who is dying or to die of tuberculosis has a similar curve. So gradual and imperceptible to his comprehension are its graduations, that he does not know where he is on the bend of the curve, but he knows quite as much about it as he does about the deficient-ventilation curve, represented by the graded line from live to dead air. We do not appreciate our individual positions on this ventilation curve, as to the respective confinements of our bodies in closed spaces and the resultant imprisonment and dwarfing of our respiratory and circulatory systems; and it becomes a pertinent question to each one of us: Will we be exterminated by these conditions or will the final extinguishing act be transferred to our children, handicapped as they will be by present ignorance?

Where on our imaginary deficient-ventilation curve, is the room we have described? Do I controvert the judgments of physicians who have so often felt like smashing the scanty windows of the sick-room or sleeping-chamber in order to let in some pure air, by saying that its imperfect ventilation places it 20 to 40 per cent. along on the downward extension of the curve? Admitting this you see the whole force of my argument. We must judge by contrast, and our sensations are only partial guides. The purest air, and therefore the liveliest air, I know of, is found when you stand on some eminence in the rays of the rising sun, with the air coming to you from the hills or mountains beyond, sifted through pines and firs; with your feet upon the dry but negatively electrified ground, while your head or perhaps your whole body is in the strongly positively electrified atmosphere. You breathe into your uttermost air-cells this ozonized air, the cast-off carbonic acid goes from you the instant it is

exhaled, and every nerve in your body is stimulated to normal life.

The deadest air, I think I ever breathed was in the Mammoth Cave of Kentucky. I found there little 12 by 6 by 8 ft. rooms constructed of stone, with one door and a 16-inch square window in each. They had been built for the supposed climatic effect of the equable temperature, always 58 F. I was told that they took sixteen consumptives down there for one month. Four died there, one a week after coming out, and none were benefited. In comparison with the positive effects of live air cited above, such negative conditions, such deadness of atmosphere and ignorance of the requirements of human beings give the mind an ineffaceable shock. Should a further illustration of dead air be needed, let us consider the lead chamber which Angus Smith constructed for his experiments, in which no possible interchange of air with that outside could occur. Imagine Dr. Angus Smith remaining therein, rebreathing its atmosphere as he did till candles went out, and you will have a good idea of what I mean by absolutely dead air, the effects of which, as described by this faithful investigator, I have no time here to dwell upon.

Previous to this experiment, Dr. Angus Smith had thought the real evil was from organic substances in the air, but afterward he concluded that carbonic acid, even in small amounts, had an injurious influence. In this connection it is interesting to note that Lavoisier and Saguin found that the human limit of the possible re-breathing of air was when the carbonic acid had reached 10 per cent. and that "was bearable only for a short time," while Angus Smith says "it seems to be impossible to endure four per cent. for any length of time."

The life of the air consists, to a greater extent than has been heretofore recognized, in the molecular motions of its atoms caused by the sun's influence. The diffusibility of the air, the easy motions due to changes of temperature in different strata, and the fact that light and sound depend upon the wave-motions of ether, are all forms of molecular activity which probably impart the life-giving principle to our atmosphere. This motion is always present until meddlesome man interferes. For instance if a narrow beam of light is thrown into a closed dark room in which the air is apparently still, every particle of dust is seen to be in constant motion. From the fact that there are varying states and amounts of electricity in the different strata of the atmosphere, the conclusion is justified that finer forces govern the life of the atmosphere than merely its composition of oxygen, nitrogen and carbonic acid. Nor should we forget the contribution of vitality vegetation brings through its constant interchange of oxygen for carbonic acid. This, with the qualities of atmospheric electricity and molecular motion, is all in restraint if not annihilated in poorly ventilated rooms.

This restraint of molecular motion and consequent limitation of vitality are in direct proportion to the deficiency of ventilation. Herein I conceive lies the great mistake of our civilization in relation to healthful human life. Here is to be seen the need of education that this cause of disease may be understood.

Let us try to elicit analagous evidence of vitality in the growing media of other products of Nature than those of the dwellers above the surface of the earth. The ground in our latitude becomes dead earth to vegetable

growth as the cold of the Fall and Winter gradually annuls its vitality; but the warm penetrating rays of the sun in Spring and Summer transform it into live earth for the wonderful fructification of plant and animal growth. Plants too have their life-curve, which depends upon the vivifying and transmitted influence of the sun's rays. Shut out that influence and the life-curve becomes immediately abbreviated.

Again, let us consider the fish class, a medium creation depending upon air, and water for its atmosphere and food. They constitute its life-giving agency and can not be greatly changed without its extinction. How wonderful is the effect of the fish's environment upon its life-curve, and upon its distinguishing characteristics, as shown by the eyeless inhabitants of dark caves, the big-eyed sunfish of the open pond, the sluggish sucker of the mud creek and the lively grayling of the rapids.

The liveliest I have ever seen was when, within view of a snowbank in the Rocky Mountains, a cold dashing stream lashed itself, by its perpetual motion over rocks and stones, into a fit abode for the mountain trout, that creature full of ozone and vim, which life elements he transmits even to the fisherman who joyously captures him.

Note the difference in the life quality of that trout and of another of the same species pulled sluggishly up from 100 feet below the surface of a still lake. The higher the order of evolution, i. e., the more delicate and special the development of the nervous structure, the more susceptible to and influenced by the changes in environment are all created beings.

Applying this principle to the human family, we see that a limit of civilization can be reached where delicate or

slight changes of environment may cause dissolution as well as evolution; where extinction from lack of conformity may take the place of evolution because of conformity to our environment.

We may argue against the cramped chest and round shoulders of the bicycle rider; but the bicycle is doing a world of good in getting people out of doors, in addition to the improved aeration of the blood which results from its use.

We admit the "visiting the iniquities of the fathers upon the children unto the third and fourth generation," meaning, in these days, syphilis and like hereditary evils; but this law of transmission likewise works itself out to the extinction of the users of defective and deficient ventilation.

We discuss the inhalation of irritant powders and poisonous gases in certain hazardous occupations; but defective ventilation, considered in conjunction with such causes of disease, increase their injurious effects manifold.

We may reason that the tubercle bacillus being the constant accompaniment of the decaying process in tuberculosis is consequently the cause and source of all this evil; but the very lateness of its appearance shows it to be rather the result than the cause. Its absence in many forms of scrofula, adenoid growth, wastings and catarrhs which surely eventuate in mature tuberculosis show that the pre-tubercular stage and perhaps the first stage of tuberculosis are already established presumably in advance of the germ. These conditions have been proved by the tuberculin test to be a part of the real disease before the microscopic or any other ocular demonstration of the bacillus is possible. The Widal

test for typhoid fever now joins the tuberculin test in showing a dyscrasia which we know to be due to the presence of latent tuberculosis. This occurs before any ocular evidence of the mature germ is possible.

The destructive influence of sunlight upon the tubercle bacillus is now generally admitted. If in addition, the contention of Frankel, that it is a facultative anaerobic germ, is sustained then the claim of a predisposing cause in defective ventilation is strengthened by the favorable conditions furnished for such germination in the unventilated lung.

We thus go back of the tubercle germ to conditions which are bound, under favoring circumstances, to eventuate in it, and the following important statement is warranted, which controverts the trend of scientific thought of this decade as to the prevention of tuberculosis—namely: If all of Koch's bacilli of tubercle on this earth were instantly destroyed, in due time, under the same conditions, our world would again have an ample supply. It is not for me to pretend to know the exact time which would elapse, under such a supposed temporary dispensation of Providence, until the terrible intensity of the "white plague" would be again as great as at the present time. The old times would come back soon enough. Undoubtedly, some of us, even those who are now incubating the germs, would live longer and be much wiser for such experience. We would, however, surely see the wave of bacillary domination sweep back over the human race, bringing the equivalent of the present time, when, as Osler says, two per cent. of the people living have the disease, and when, as it seems to me, ten times as many are getting ready for it.

Tuberculosis has come here to stay until we, the thinking masters of creation, acquire the education to understand and abolish it. It will not "down" in response to any edict against street expectoration, the disinfection of rooms occupied by dying consumptives, or even the slaughtering of tuberculosis cows, although these measures of prevention are most important.

The drift of this reasoning is to this conclusion: Tuberculosis springs from, or is the outgrowth of, some unified cause which will account for its existence in cattle and horses, birds and other animals, as well as in man.

I wish to refer to the excellent paper presented by Dr. Charles Gresswell to the National Live Stock Association at its late meeting in Fort Worth, Texas. From his considerable experience as a veterinarian in Colorado he shows that it is entirely unnecessary to use the tuberculin test with the "plains" cattle in the Rocky Mountain region, because even those previously infected, and transferred to the plains, there outlive their tuberculosis, and it does not appear in the next generation. In proof, he instances the surviving members and the progeny of a very badly infected herd of overbred Shorthorns, inbred and closely housed, of which I myself was cognizant. If also you bear in mind the great mortality from phthisis, etc., of the French and English cavalry horses under close stabling, which was quickly prevented by open-air stabling, if also you are acquainted with the corroborative evidence of the close domiciling of cows, the confined caging of birds, monkeys, guinea-pigs and other animals, the crowding of human beings in ship-holds, prisons, almshouses and places of public detention, or the civilizing and housing

of savages, as of the American Indian, you then have to come to the conclusion that tuberculosis results either from the species of autoinfection from rebreathing the body's own exhalations, or from the fact that the air of these confined spaces becomes a source of infection from the loss or annulment of its life-giving principle.

Thus we are brought back to our sample room, the abode of a human being, the meagre size of which, and its deficient sunlight and air circulation, afford a sufficiently marked degree of deficient ventilation to constitute it a glaring fault of our civilization. This now seems to be the initial cause or starting-point of tuberculosis, which probably kills more people than war together with any other one form of disease known.

The study of the remarkable diffusibility and penetrability of gases, even through glass windows and brick walls not to mention wooden doors with the many cracks around them, gives us some hope through what is called "insensible ventilation." But the fear is that even this much of protection will be annihilated through the perfection of carpentry. The education which the people need, even the common people, and we doctors too, *must* be obtained and the architects and builders are not exempt from this necessity.

A more thorough study of this intricate question would lead the architect whose usefulness is too much limited by the demands of an ignorant public, to be an upbuilder of people's health as well as of their houses. It is to be hoped that he will thus arrive at a more encouraging conclusion than did James A. Greenleaf, C. E., in his "How Much Ventilation?" when he said "For the ordinary private house a systematic air allowance per individual is almost

an absurdity—for many of them a thorough systematic plan of ventilation is unnecessary, even were it not debarred by reason of the expense inseparable from it."

Whether ventilation, suited to the size and purpose of a building, the climate and the exposure, shall be by natural or artificial means, whether by propulsion or extraction, and how it shall be modified by the artificial aid of heat, steam and electricity, I have not time to consider in detail. My object now is to emphasize the need of ventilation of our living and working rooms. Lack of ventilation leads to the pale face, sallow skin, weak pulse, cold hands and feet and sluggish bowels; the feeble powers of digestion, assimilation and nerve energy—all proofs of a flagging vitality. This lethargy is due to enfeebled and poisonous blood-corpuscles, and a probable autoinfection, but especially to deprivation of food for the blood, i. e., oxygen from the air. In addition, the dead air, which marked deficiency of ventilation implies, compels inactivity and limited use of the lungs, and this, in turn means the gradual clogging of out-of-the-way air-cells with the products of combustion. In this manner, carbonic-acid poisoning and the species of autoinfection, heretofore described, are are most naturally located and more or less permanently established.

I will not pretend to say what the details of a law of ventilation should be, but there should be such a law, enforced by proper legislation. That detail will be an outgrowth of the education which is essential to right legislation. In general, however, it should determine the minimum ventilation allowable in every assembling-place or habitation for human beings,

and for dairy cows, horses, etc. The limitation should be adjusted to the various lives and activities, with which the law has to do. If law can protect life by fire-escapes, the necessity of stand-pipes, the abatement of the smoke nuisance, the ventilation of sewers, and the non-pollution of drinking water, certainly this more subtle and ever-present cause of degeneration and death, defective ventilation, even in its slighter degrees, should come under its fostering care.

I suggest that an effort be made to establish and maintain the equivalent of the following: For a living apartment, a minimum space of 1500 cubic feet per individual, and a minimum ventilation or change of air of 2000 cubic feet per hour per person. If this is not afforded in new houses, then transoms over outside doors and windows, preferably opening inward at the tops should be required.

A course for the study of ventilation should be made a prominent feature in all advanced schools and colleges, and the government should carry out the many investigations which will help to determine both the best means, and the proper and necessary limits of ventilation. This is one of the ways in which a national bureau or board of health, properly established and supported by our general government, could prove itself one of the most useful and worthy of all the different departments which are represented by secretaries in the President's Cabinet. Until such a national board is established, the government ought to found and liberally maintain a commission on ventilation of houses, public halls, schools, factories and mines. Properly conducted, such a commission could do incalculable good.

SKIN SHEDDING.

Residing on a little truck-farm near Omaha is a man who sheds his skin every year. He has put on a new epidermis every year since birth. For the last five years the transformation began exactly on the 27th day of June. Prior to that time it came either in July or August. About a month is consumed in the process of discarding the old cuticle and the appearance of the new. During this time the finger and toe nails become loose and are discarded, new nails coming on, but more time is required in growing the nails to maturity.

The man who annually undergoes this strange process of desquamation is S. O. Buskirk, who was born in Clark county, Missouri, May 30, 1850, near Quincy, Ill. He is the father of three daughters and a son now grown. Were it not that his hair is slightly tinged with gray Mr. Buskirk would be regarded as a man of 40 for he is strongly built, robust and agile. His complexion is good and his eye is bright.

"I was never sick in my life," said he, "and have taken but very little medicine for these annual attacks, only a little something to allay the fever that accompanies them. It is a freak of nature. The doctors cannot tell me what it is or why it is, nor can they prevent it. Very few have ever tried and I won't let any more of them experiment upon me. After the skin has been shed I am as good as new and feel like a boy of 18. Yet I dread the process of peeling, for it irritates

and debilitates. I have eaten little or nothing for three days and am weak. Many years have I hoped that some scientist might find a means of preventing the recurrence of my trouble.

I have never heard of but one similar case a man in Montana, but that was some years ago and I have forgotten his name. This foot of mine is itching terribly to-day, continued Mr. Buskirk, as he removed shoe and sock.

No further evidence was needed to ally doubt as to the truth of this man's statements. The scarfskin was peeling off. Part of it hung down below the flesh of the foot, resembling a white, thin moccasin partially slipped from the heel. It was not pleasant to look upon. The skin of the body exfoliates in flakes.

"I could pull this all off now," explained Mr. Buskirk, "but if I did so the new skin which is forming would be so tender I could not walk. So I must let it take its own time in coming off, which may be a week or ten days."

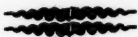
The hands undergo the same recreation. The discarded cuticle of the hands which Mr. Buskirk has preserved looks like thin white rubber gloves, a little tattered and torn. At the newspaper man's request Buskirk stepped to his room and got his erstwhile hands and permitted photographs to be made of them. He was not a bit anxious to parade his infirmity yet he is willing to do all he may to the end that some scientist may cor

rectly diagnose his case. He is a man of good nature and intelligence and disposed to respond to every reasonable request.

"You see my finger nails are beginning to loosen," said he, exhibiting the tips of his fingers, "and the skin on my hands is beginning to bother me again. Within ten days it will all have been replaced by new skin. This always starts at the roots of the fingers, gradually spreading in all directions. Then this hardened skin begins to puff up and break away from the new skin that is forming underneath and if I tap it with a lead pencil at such times it gives off a sharp sound like striking a piece of celluloid or stiff leather. Finally, by opening and closing my hands often, the skin parts along the edge and then, by helping along the process with a pocketknife, the piece comes off whole. Buskirk has several interesting souvenirs in the form of patches of skin which he has shed from his hands and feet at various times during his career and in every instance these present perfect outlines of the members from which they came. For example, the "bark" from the palm of the hand might easily be mistaken at first glance for one half of a glove. Moreover, the thick, callous

like skin retains the mysterious lines of the hand of which palmists make so much. In this connection there is in the Buskirk case a fact which tends to disprove the entire theory of palmistry, being evidence that the lines of the hands change with time and are not unalterably preserved, as has been supposed. Among his gruesome keepsakes is a piece of skin taken from his right hand when he was ten years old. It is observed that while the general confirmation of the lines corresponds with that of his right hand as it is to-day, still the individual lines are longer now than then, even after making allowance for the growth of the member as a whole. Fully a third has been added to the length of the famous "life" line. It is as if destiny had intended him originally to be of brief existence in this vale of tears and had later changed her mind and concluded to endow him with the boon of longevity.

"My father," said Buskirk, "is 103. He lives at Portland, Ore. His father died at 110 years. My brothers and sisters are all strong and hearty men and women. I am the only member of the family who can be called a freak."



Editorial

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FERRO-SOMATOSE.

Not long since a valuable preparation was introduced by the Farbenfabriken of Elberfeld Co., Germany and New York, which combined the tonic properties of iron with those of somatose. The latter substance, as is well known, is a meat extract in powder form, but which is combined in many different ways to excite taste. Somatose chocolate has been for some time on the market as a palatable and beneficial preparation.

For a year past I have been employing this newer combination known as Iron Somatose with most gratifying results. My first experience with it was in the convalescence of typhoid fever. The case had been one of considerable severity in a little girl of ten years. The Ferro-Somatose was used when the temperature had touched normal on the morning remissions. She seemed to pick up strength and color with remarkable rapidity. The next trial was on an adult male recovering from a less severe case of the same disease. His recovery was also hastened times I have used it for the debility fol-

by the action of this preparation. Several lowing confinement or miscarriage with the same beneficial results.

A case of pneumonia in a young girl of sixteen years, was given Ferro-Somatose after the crisis and recovery was exceptionally prompt.

The combination of meat and iron, both good tonics, if carried out as successfully as seems to be the case in Ferro-Somatose will act with promptness in all cases of anæmia from most causes. Of course as with any other preparation, some good judgment and common sense is necessary on part of the physician to select his cases in which this preparation will not disappoint him, but I should particularly advise it in cases of convalescence from the acute fevers and in simple anaemia or chlorosis.

This company are now presenting another combination known as Iron Somatose Chocolate. It is similar to the well known Somatose Chocolate with this ferum added—certainly this Somatose Chocolate is worthy of a most extended trial.

"A VISIT TO AN UP-TO-DATE LABORATORY."

A courtesy which was extended to the members of the American Medical Association on their way home from Atlantic City was an invitation to visit the Bacteriological Laboratory of Messrs. Reed and Carnrick at Jersey City, N. J. The physicians who availed themselves of the invitation were received by Dr. Warner, and he and his assistants took the keen delight of laborious scientists in showing and explaining the many actualities and possibilities of their constant work and research. The several rooms comprising the laboratory are tiled in white, and resemble nothing so much as an aseptic operating room. Instantly the cost and perfection of all the paraphernalia and furnishings used appeal to the eye of the visitor; the rows of microscopes, under which were seen slide after slide, showing bacilli enough to account for even the sufferings of Job himself; then a sterilizer, where diphtheria germs encased in tubes were enjoying a prevailing hot wave. A unique exhibit was a public school book, a geography, which had played hookey, and had been punished by having its cover scraped, and some good, healthy-looking Klebs-Loeffler bacilli found upon it.

The most modern microtomes were shown, so delicately adjusted that infinitesimally small sections could be immediately removed from a speci-

men which, when stained and mounted under the cover-glass, were so thin that they resembled but a wash of water-color.

Then came a look at the animals, kept for experimental purposes, in their comfortable miniature apartment houses. Poor Bre'r Rabbit had Tuberculosis, and refused to get better; his neighbor in the fourth floor flat was bravely fighting the ravages of diphtheria, and away out in the suburbs a colony of exclusive guinea pigs ever debated the vexed question of which little pig should go to market. Piggie's answer was awaiting him in the form of a huge Jersey mosquito, safely housed in a tube, and very hungry; and so, after the attentions of his barber in giving him a good, close shave, the guinea pig would, through the bites of the mosquito, soon be, it was hoped, the victim of Malaria.

A visit to the well equipped dark room, and a view of some fine results in micro photography, and in a small studio were some of the most effective sketches in water-color executed with the greatest skill by Dr. Warner, and replete with most minute detail, a privilege, indeed, to see these sketches.

On arriving at Jersey City, should any of our Canadian physicians have the spare time, a few minutes' ride on the Turnpike Trolley will afford an opportunity of spending a delightful hour at the laboratories. W. A. Y.

PLEURISY FROM APPENDICITIS.

(*La Pleurisie Appendiculaire.*)

The celebrated Dieulafoy, in Bulletin De L'Academie De Medicine, April 10th, 1900, following Pinard in the consideration of "Appendicitis in Pregnan-

cy," contributes an important essay on a special form of pleurisy dependent on a diseased appendix. He says he will not discuss the immediate dangers of appen-

dititis, but rather some of those redoubtable sequelae which are often mortal, especially when the pleura is involved. He then details the history of a man twenty-six years old brought into St. Christopher's Hospital suffering from a large purulent effusion in the right pleura. On puncture a thick, brownish, faecal smelling fluid was withdrawn. There was every evidence of acute gangrenous changes. But patient was in collapse, and nothing could be done by surgery. M. Duplay declined to operate. Patient died six hours after admission. Here is the antecedent history of the case :

Patient entered hospital 29th of November. On November 11th this young man, heretofore in excellent health, was seized with severe colicky pains. Mustard was applied and paregoric was freely given. On the third day he felt better again and visited his grandmother. On the evening of this day he was seized with such violent pain in the right side that he could not return home. The usual remedies for colic were ordered. The next day he had chills, vomiting and fever. On sixth day was seized with a fresh attack of pain over the liver and commenced to cough. Later the pain extended up over the right lung. The rest is known.

En resume : There were, first, an attack of appendicitis, acute and classic, treated medically ; second, propagation to the thorax ; third, symptoms of pyothorax and death. On autopsy a gangrenous, putrid pleural effusion was found. Opening the abdomen in the centre, the peritoneal cavity was seen free from infection ; but coming down to the caecum behind the colon a vast pus sac was found, and adherent to this a gangrenous perforated appendix was found. There was no perforation of the diaphragm, although the posterior surface of the liver was found covered by coagulated pus and a false membrane. But

the left lung had been infected. At the summit, a hepatized mass, the volume of an egg was found. On bacterial examination of the purulent products, the colo-bacilli were found in great numbers, just as they were from the pus aspirated during life. M. Dieulafoy, after submitting in detail the varied pathologic features of this case with the hand of a master, proceeds and deprecates in unequivocal terms any temporizing measures in appendicitis cases. He adds : " If this young man had been operated early a life would have been saved. *And in these cases one should not lose precious time by administering purgatives, injections or opiates.* Oh ! this medical treatment, illusory treatment, treatment based on illusory pathologic conceptions ; and I repeat, with more emphasis than ever, that medical treatment here is vicious, because it seems to accomplish something, while it can never be effective. It permits the terrible toxi infection for the final mortal stroke."

This indeed, is strong language from the lips of one who himself is one of France's most noted physicians ; one of those to whom we should look for support of conservatism, if such a term has any place when appendicitis is once diagnosed.

M. Dieulafoy says that one might object that the outcome of this single case was exaggerated and that this type of appendicular invasion is very rare ; but he affirms with some vehemence that it is by no means rare ; that there are several cases of hepatic abscess of appendicular origin on record ; several of the diaphragm and a large number of cases of appendicular pleurisy. He then, with most commendable industry and erudition records several other cases seen by himself with M. M. Brun, Jalaguier, Larcher, Monod, Terrillon and other eminent surgeons ; moreover he quotes a large number with singular fullness and

detail from the current German literature. He shows, first, that in quite a few we have a fetid, purulent pleurisy, co-existent with suppurative appendicitis; and second, that in many by late operation we cannot prevent a consecutive and dangerous pleurisy, as the pleura is already invaded at the time the gangrenous appendix is removed. The records of hepatic, phrenic or pulmonary invasion in these cases is chiefly by the lymphatics; but as to the liver it is more probable by the portal vein.

NOTE: At the conclusion of M. Dieulafoy's essay, M. Lanceveaux stated that the facts submitted by the essayist were correct. He had himself seen these cases; nevertheless, everything considered, they are quite exceptional. But it is the *exceptions* we should be on the alert for, as the common types of appendicitis any tyro can readily recognize. The lengthy and learned brochure of the veteran Dieulafoy in many respects must be regarded as an extraordinary and unique production. It illustrates the remarkable capacity of many advanced in

years for keen observation, and their graphic facility for description, their eager interest in all that pertains to progressive science. But a year or two before the death of the late indefatigable Loomis, in an address before the American Association of Physicians, in Washington, probably realizing his approaching end, in terse, pathetic terms he noted how frequently in advancing years the brain possesses all its intellectual activity while the body yields to unmistakable decrepitude.

This contribution of Dieulafoy, from his great eminence in the profession and the total absence of selfish interest, coming from a physician, too, must needs give a fresh impetus to early operations in all cases of appendicitis.

In the surgical section of meeting of American Medical Association in Atlantic City, by a great majority the early operation was urged, the only emphatic protest against indiscriminate laparotomy for appendicitis came from the renowned Senn, who denounced it in unequivocal language.

T. H. M.

COCAINE INJECTED INTO THE SPINAL COLUMN PRODUCES LOCAL ANÆSTHESIA.—A FRENCH SURGEON'S DISCOVERY.

Dr. J. B. Murphy and Dr. E. H. Ochsner have returned from the triennial meeting of the international medical congress held in Paris. Dr. Murphy brings with him an interesting report of the discovery and demonstration of the effect of local anæsthesia as applied in cases of major surgery. Local anæsthesia heretofore has been applied only in cases of minor surgery, chloroform and ether having been the only known agents used in cases of major surgical operations.

The efficacy of local anæsthesia in cases of amputations and other major surgical operations was discovered

and demonstrated only a short time ago by Dr. Tuffier of France, and has received notice only in the Parisian medical journals.

Its demonstration by Dr. Tuffier before the surgeons attending the international medical congress awakened wide-spread interest, and the event was announced as epoch-making in the annals of medicine.

Cocaine was the agent used by Dr. Tuffier, it being injected hypodermically into the spinal cord and anæsthetizing the entire region before the point of injection so perfectly that the most difficult surgical operations

below that point were carried on without pain, and while the physician carried on conversation with the patient.

The event, Dr. Murphy says, marks a fourth epoch in medicine, the other three being, first, the pre-anæsthetic period; second, the anæsthetic period; third, the antiseptic period, and now the local anæsthetic period. He said:—

The demonstration of the practicability of local anæsthesia in cases of major surgery was perfect. Dr. Tuffier, the discoverer, operated on four cases hypodermically injecting cocaine into the region occupied by the cerebro-spinal fluid in the spine, and anæsthetizing perfectly the entire body below the point of injection. This enabled him to perform the most painful operation without the patient experiencing the least sensibility.

The discovery is a wonderful one in surgery, inasmuch as out of 130 cases operated upon by him he stated he had had no fatalities. The discovery of the practicability of anæsthetizing the spinal cord by hypodermic injections of cocaine and producing insensibility below the point of injection was made by Dr. Tuffier in March last.

The fact was commented upon at the time by French medical journals, but received little notice in the United States or throughout the continent and England. Like all discoveries of the kind that have been made, it may now be termed a simple thing, since it seems to be so easy.

The discovery removes chloroform

and ether from their places as the great anæsthetizing agents for use in cases of major surgery. These agents have been greatly feared by a great many people, owing to their effect upon the heart and lungs and the distressing nausea they often produced. There are no such ill effects from the use of cocaine, although, as it is well known, the drug is not reliable, and has produced the most distressing results. So far, however, there has been no danger encountered in its application by Dr. Tuffier, and its use bids fair to become general rapidly among members of the profession.

It has been popularly supposed that puncturing of the spinal cord was fatal. This is not absolutely true, however, and especially so in the manner in which the injection is made by Dr. Tuffier. The needle is pushed into the region occupied by the spinal cord, its entrance being demonstrated by the appearance of cerebro-spinal fluid at the base of the needle.

The injection is then forced home, its effect being to paralyze the region of the body before the point of entrance, the knife causing no pain in the region affected. I witnessed the excision of four abdominal tumors by Dr. Tuffier, he talking to the patient while prying the knife, the man feeling not the slightest sensation of pain.

Nothing, however, is said of the effect of the drug locally on the spinal cord and we should not be surprised if this mode of procedure would have equal if not more disagreeable drawbacks, than the general anæsthetics.



THERAPEUTICS

In charge of H. B. SHEFFIELD, M. D., New York.

ON FORMIC ALDEHYDE AND FORMALIN AS A DISINFECTANT.

BY T. POYNTZ WRIGHT, M. R. C. S. ENG.,
L. S. A.

Formic Aldehyde and Formalin have now been used as disinfectants for a length of time sufficient to enable a just opinion to be formed as to their value, and to consider the position which they are entitled to take amongst those agents that are accredited with power to enable us to successfully fight the battle against infection, and to protect us from diseases which are spread by their own specific organisms.

The details of the observations made by independent investigators, as to the action of Formalin and formic aldehyde upon the various pathogenic germs, have been so fully described by their authors, in the medical press, that it is quite unnecessary to recapitulate them in a small *brochure* of this sort. It will be sufficient to state the results arrived at, and the deduction derived from them, together with the experience we have acquired, as to their action when used as disinfectants, and the best methods of using them effectually.

The value of formic aldehyde as a germicide, when used in the gaseous form, has been clearly demonstrated by the results obtained from numerous experiments, and the facts recorded by one or two may be noted here. Prof. Sheridan Delepine found "that, with unimportant exceptions, the *bacillus coli communis*, *bacillus pyocyaneus*, *bacillus tuberculosis*, and *staphylococcus pyogenus aureus*

were killed; whether in the dry or moist state, even when placed in deep and narrow recesses (two inches from the opening of tubes open only at the end, or protected by one to three layers of filter paper, or embedded in a thick layer of sputum)." He "found also that the spores of *bacillus anthracis* were killed in twelve out of nineteen experiments," and further adds that "it is quite evident that formaldehyde is the best gaseous disinfectant for objects that are liable to be damaged by damp, chlorine, dry and moist heat."

These results are confirmed by other observers, especially Messrs Robinson and Bryant in their bacteriological report upon formaldehyde.

Formaldehyde in solution, as Formalin is also of very great value as a disinfectant. Professor Sims Woodhead states that "there can be no doubt that formic aldehyde, or Formalin, was an exceedingly powerful disinfectant." Dr. Leslie Mackenzie, Medical Officer of Health for Leith, in an admirable and most exhaustive paper on "Methods of Disinfection," which appeared in the May issue of *Public Health*, speaks of Formalin in the highest terms. After describing the results arrived at by Mosso and Paoletti, by Walter, Dr. Basall, and Aronson, he adds: "These are only some striking selections from a vast amount of evidence to justify the inference that, if the pathogenic organisms are subjected, for a sufficient time, to a sufficiently strong solution of Formalin, the results will be disinfection."

As to the best mode of using formic

aldehyde and Formolin, the most effectual manner in which to secure certain disinfection is, I believe, to use the *first* in its *gaseous* form, and the *latter* as a *spray*. The one is not, I think, complete without the other, and both methods should be adopted at each disinfection.

For gaseous disinfection I use the "Alformant Lamp," which vaporizes polymerized formic aldehyde, as paraform, by means of heat in the presence of water produced by the combustion of methylated spirit. This apparatus is not only very cheap, but very simple in its action, and very portable—a matter of much moment in rural districts, where long distances have to be covered, and several houses disinfected the same day. Whilst fully admitting the thorough efficiency of "Trillat's Autoclave," it is an elaborate apparatus, and requires a skilled operator to use it, added to which its expense (£ 18) would be prohibitive in rural districts such as mine.

The great difficulty in gaseous disinfection is the closing of all and every aperture, and I believe that, practically, this consummation *never* is actually arrived at, and the operation is therefore necessarily to some extent imperfect, and it is for this reason that I use Formalin as a spray in addition.

Besides pasting up windows, doors, and all crevices, I use towels or flannels soaked in Formalin, then *rolled tightly up* and afterwards pressed down over all the pastings and over every spot where the gas is likely to obtain an exit.

With respect to the use of Formalin as a spray, the solution used may be of various strengths. In one instance, during a limited outbreak of small-pox, I used a 10 per cent. solution, but the spraying had to be discontinued for a short time, more than once, as the man who was disinfecting could not stand the strength. I have also in special cases

used a 6 and 8 per cent. solution, but for all practical purposes a 2 per cent. strength, or slightly stronger, is amply sufficient to prevent polymerization. I have (since the first year of using Formalin) adopted the same course as Dr. Leslie Mackenzie, and added glycerine in somewhat the same proportion. I believe I am correct in stating that I was about the first medical officer of health in the kingdom to use formic aldehyde and Formalin as a disinfectant generally for houses and rooms.

The Therapist of May, 1898, contained some observations of mine on disinfection generally, and the selection of an agent best suited for the disinfection of rooms. I then strongly advocated the adoption of formic aldehyde and Formalin for that purpose, as the most desirable medium, and I am glad to find that the views I then expressed have since been endorsed by many medical officers of health of the highest standing. Personally, all the opinions I then held have been more than confirmed by a further experience of two years. At first I used the gaseous method *without* spraying, but the advantages of combining the two together soon became apparent.

The plan I adopt is to use the spray first, everything in the room being thoroughly wetted. The room is then treated with the formic aldehyde as gas by the "Alformant Lamp." Further than this, a sheet soaked in Formalin solution is hung outside the patient's door, and towels soaked in the same way are hung about the room not in sufficient strength to cause irritation, but sufficiently strong to give off some amount of formic aldehyde. This is a good practice while the patient is *in* the room, as it serves, to a certain extent, for disinfecting the person of the patient and nurse; but this, of course, has nothing to do with the after disinfection.

Formerly, when using the old sulphur

fumigator for disinfection, we constantly had recrudescences of measles and scarlatina—especially the latter—in houses which had been previously disinfected for diseases of a similar nature. There was no possibility of accounting for these recurrences from any agencies outside the houses, and I was reluctantly driven to the conclusion that the fault lay with myself, and that they were the result of imperfect disinfection. I at once gave up sulphur, and used formic aldehyde; and in confirmation of my theory of previous imperfect disinfection, I may say that since that time recrudescence of infectious disease in houses that had been disinfected with formic aldehyde is practically unknown.

I think there is ample evidence to prove conclusively that in formic aldehyde and Formalin we have the best, safest, and most reliable disinfectant yet given to the profession.

The only other one that appears equal to it is the mercuric perchloride, but any superior advantages which this salt may possess over Formalin is surely more than counterbalanced by its highly poisonous and dangerous nature, in comparison with the harmlessness of the other, and by the toxic results and irritating effects produced at times upon those who use it; and it cannot be lost sight of that, in the hands of ignorant persons, there must be a certain risk in handling it.

FOOD THEORY OF MEDICINE.

Walter Emery Merrill, M. D., U. S. Marine Hospital Service, says: "Among the advanced members of our profession, I believe the drug tissue-feeding theory no longer obtains. And rightly so, for it has not been proved that medicine is ever, *in itself*, a food. The large number of malarial cases emanating from the tropics are cured in the Marine Hospital service, not by tissue-feeding, but by

ridding the system of the intruder and directing the vital forces along the lines of repair. This I find to be best done by the frequent and judicious administration of laxative antikamnia and quinine tablets."

DYSMENORRHEA AND ELECTRICITY.

In discussing the treatment of dysmenorrhea before the American Medical Association, G. Betton Massey said, (Medical Record, June 23rd), that menstrual pain was not due to obstruction, but to the attempt of nature to perform a cyclic function with organs that were undeveloped or diseased. The obstruction theory had been disproven by Schultz, by the speaker, and others, who found no accumulation, and a canal amply capable of drainage. In the obstinate cases that had been proved rebellious to medicinal treatment of the neurotic elements, he found catarrhal endometritis usually present, and obtained cures by the use of the galvanic pole, preferably mercurialized, within the uterine cavity. Dilatation was condemned as unnecessary and at times harmful. The treatment should not be intrauterine unless a persistent discharge was present.

CLINICAL EXPERIENCES WITH LEVICO WATER.

BY PROF. A. MUNOZ, OF THE HOSPITAL DE LA PRINCEZA, MADRID.

The therapeutic value of the arsenio-ferric springs of Levico have been known to me for some years. Practising in a very marshy district, where anæmia and cachexia probably caused a most important indication for Levico Water, I desired to become more acquainted with the water, and to test its therapeutic action.

With this I succeeded in occupying

myself for more than two years in the hospital, which contained a large number of beds, and also in my private practice, and upon these grounds here beg to publish my opinions.

Although, generally speaking, my patients readily took the Levico Water, and bore it well, I was in some cases compelled to suspend its use, owing to the appearance of gastric irritation (vomiting, digestive disturbances, colicky pains); especially with the Strong. In a large number of pathological symptoms, especially in anæmia, hydræmia, decrease of blood corpuscles, and general debility, I obtained improvement, even complete cure: but my best results were obtained in cases of malarial anæmia, malarial cachexia, and in the chlorotic anæmia of young people. In every single case treatment was remarkably successful from the moment when the patient took a bottle of the Strong water. The patients themselves noticed how the colour improved in their cheeks, the visible mucous membrane, such as the lips and conjunctiva, taking a more healthy appearance. The appetite returned, the weakness decreased and the nightly fever disappeared; sleep became more prolonged and quieter; and, lastly, the body weight increased from fortnight to fortnight. In our districts the poverty of the country and its inhabitants, who chiefly suffer from these diseases, is the reason why Levico Water is not used to a larger extent in Spain; more especially in marshy districts, where anæmia is so prevalent. Many of the favorable results obtained by me and some of my colleagues referred to colonial soldiers who had returned to Spain, and whose houses were situated in these marshy districts. I have voluminous correspondence showing that after the employment of Levico Water in the private homes the final results were good.

I have also used Levico Water in some cases of chorea, but only in one case

owing to the great persistency with which I exclusively prescribed Levico Water, cure was effected without a relapse taking place up to the present (twelve months afterwards). My colleagues, Drs. Rodriguez, Abaytuo and Moreno Zanuda, both specialists in diseases of the stomach, reported to me having obtained favorable results in many cases of digestive disturbance and weakness of the stomach. Drs. Benitez Benavente and Tolosa Latour, specialists in diseases of children, were also satisfied with the result obtained, although in some cases the water was not well borne, and had to be discontinued.

The following two cases, treated by me exclusively with Levico Water, may be of interest:

Case I.—Girl, aged six years. Had suffered from chorea for from two to three years, accompanied by partial paralysis of one side with muscular spasms of the extremities of the affected side. The child had undergone various treatments in first-class clinics, including electrotherapy, massage, hydrotherapy, etc. When the child came under my care in February locomotion was difficult and almost impossible. She continually gesticulated, and nutrition was greatly impaired. I prescribed Levico Mild, and after two bottles had been taken, I placed her upon Levico Strong, which I had to discontinue twice, owing to some discomfort being experienced, *e. g.*, colic and indigestion, and then returned again to the Mild. The child improved considerably; nutrition was increased; she gained in weight; digestion became satisfactory; and above all she was able to move about without difficulty and without any external signs of disease. Her gesticulations became very rare and were hardly noticeable, and there only remained athetosis and a certain irregularity in the movements of her arm.

Case II.—Female, aged thirty-two

years, occupying a bed in the hospital. Suffered from catalepsy at irregular intervals of from six to fourteen days, the cataleptic sleep lasting for six, twenty, and even forty-eight hours. She was hysterical and anæmic, and suffered also from regular vicarious menstruation, the flow passing through the nose for some years, in place of *via* vagina, the hæmorrhage lasting for three, four, or six days. For a month she was given Levico Water exclusively, commencing with the Mild and continuing with the Strong, both of which were well borne. I determined to continue with the water, seeing that the result was so encouraging. Nutrition was improved, and the anæmia less pronounced; her appetite became better and her digestion good. Since the patient had taken Levico Water she had but one attack of catalepsy, the sleep lasting for eight hours only. The menses still passed through the nose, but became less copious, the hæmorrhage being much shortened in duration; so that the employment of therapeutic remedies, such as ergotin, plugging, etc., did not seem to me necessary, as had been the case in previous menstrual periods.

In reviewing my own experience, as well as that of many of my colleagues in Madrid, I can state that we all consider the employment of Levico Water of great value, which, having no other water of the same value at our disposal, should be considered a necessity in practice. The water being practically new in our country, a little time is required to make it known to the public, who have been used to Fowler's solution and other preparations, and who, when using mineral waters, like taking it by the glass and not by the tablespoonful.

A NEW METHOD FOR THE EMPLOYMENT OF EUPHTHALMINE.

By CASEY A. WOOD, M. D., CHICAGO.*
Some years ago, while supplement-

ing the experiments of Lang and Barret relative to the increased mydriatic and cycloplegic effects upon the eye of homatropin when instilled with cocaine, the writer was able to show that the latter agent also stimulates the action upon the ocular apparatus of other drugs when locally applied. Not only, for instance, may a complete paresis of accommodation be accomplished by atropin, duboisin, orhyoscin, when a comparatively small dose of these alkaloids mixed with cocaine is employed, but the myotic effects of eserine and pilocarpin are likewise very greatly enhanced by a similar mixture. In other words, it is not necessary, when one desires to accomplish a certain end, by instilling solutions into the conjunctival sac, to prescribe (speaking generally) more than one-half the text book dose if the place of the other half is taken by cocaine. Of course, it is possible that the cocaine may be objectionable and it may also be true, in some cases, that there is no particular reason why the substitution should be made, but there are instances in which it is of advantage—notably in the combination of cocaine with eserine. Here the irritating qualities of the latter drug are to a large extent neutralized, while its action on the iris and ciliary muscle is augmented.

This supplemental action of cocaine (the writer endeavoured to show) results from the alterations it produces in the corneal tissues—particularly in the anterior epithelium. Where strong solutions of the drug are instilled, especially if the eye be kept open, minute cracks may after a quarter of an hour and with a strong lens, be seen running over the dried and dulled corneal surface in much the same manner that the Hirschberg vessels, mapped out by a Coddington lens, appear in old

cases of parenchymatous keratitis. When milder doses are employed, the desiccation and separation of the protecting epithelium are not, it is true, so apparent, but they are probably always to some degree present. It is not difficult to understand how this direct exposure of the channels of absorption in the cornea to fluids must result in a greatly increased effect upon the ocular organism. Before the drug has time to drain into the nose it flows into the corneal lymph channels, and hence into the other anterior vessels of the globe. Probably a similar, although less effective, absorption also takes place, and for the same reason, through the vascular systems of the conjunctiva.

*The Ophthalmic Record, April, 1900.

These preliminary statements are made to introduce the study by the writer, during the past six months, of an apparently weak but very effective combination of cocaine and Euphthalmine. There are many reasons for regarding the latter remedy as one of the most valuable that has been made to our armamentarium for many years. We have long needed a pupil dilator that shall be a mydriatic pure and simple, that shall be more rapid in its action than cocaine, and not so lasting as homatropin.

Euphthalmine answers these requirements admirably, but there are at least two objections to it that interfere with its use to the extent that its merits deserve. The first is the expense of the agent. When the drug is used alone most observers speak of the need of instilling a 5 to 10 per cent. solution—25 to 50 grs. to the ounce. This makes the agent, from the dispensary and general practice standpoint, a very costly one. Then, in nine-tenths of the cases, it is used for ophthalmosco-

pic purposes only, and ten minutes' maximum dilatation of the pupil is all that is needed, after which as prompt a return as possible to the normal pupillary size is desirable. A 10 per cent. mixture of Euphthalmine produces a needlessly prolonged mydriasis. These objections will be found to be removed in average cases if the following mixture, the result of some considerable experimentation, be employed:—

Euphthalmine, } Of each one-half per cent.
Cocaine muriate, } in distilled water.

Two drops to be instilled every five minutes for a quarter of an hour. In from twenty to thirty minutes, the eyes being kept closed most of the time, the pupil will be dilated to its widest extent, and this effect, again, will have disappeared in a much shorter time than if the stronger solutions of Euphthalmine alone had been employed. In the former instance we have a sudden, sharp, but transitory action of the drug; in the latter, a slower, quite as effective, but more prolonged mydriasis.—*The Therapist*.

CALCIUM CHLORIDE IN LOBAR PNEUMONIA.

Rose cannot understand why this drug has not been more generally used, as he has found it to be a valuable antipyretic and antiphlogistic in cases of lobar pneumonia, of the sthenic type particularly. In glandular and tuberculous affections it has also proved to be of some value. His mode of administration has been to give x. grs. in 1 drachm of syrup and 1 ounce of water three times a day, in conjunction with routine treatment, expectorants or stimulants, as the case may require.—*Ind. Med. Rec.*, Feb. 14th, 1900.

THE DIAZO REACTION IN
PHTHISIS.

The Western Medical Review for June gives an abstract of a recent article on the diagnostic and prognostic value of Ehrlich's diazo-reaction, taken from an article by M. Michaelis in the *Berliner klinische Wochenschrift*, which presents some interesting conclusions. All diseases are divided into four groups with reference to their susceptibility to the diazo test: (1) Those in which the diazo-reaction never occurs; (2) those in which it usually occurs; (3) those in which it only rarely occurs; and (4) all the tuberculous processes. Here the diazo-reaction is of special importance both as to diagnosis and prognosis. When in patients without temperature we get continuous diazo-reactions tuberculosis is almost certain. Tubercular peritonitis is thus readily distinguished from ascites due to cirrhosis, though occasionally peritoneal carcinoma responds to the test. Tubercular meningitis, pericarditis and pleurisy are also to be distinguished by this means. Pulmonary tuberculosis is, however, the principal object of research. Undisguised positive reactions in these cases are to be considered fatal as to prognosis. The original Ehrlich reagent was the one used. Ingestion of certain drugs such as naphthalin, chysarobin, gallic acid, tannigen and tannalbin seems to prevent the reaction from taking place. The test seems to be positive inde-

pendently of the fever, of the number of tubercle bacilli, or the quantity of sputum. It is also positive in mild cases of tuberculosis, and when acute infections set in which alone would give negative results. From 167 cases of phthisis he draws the following results:

Negative reaction—Cured, 5; improved, 44; unimproved, 5; died, 3.

Positive reaction—Improved, 15; unimproved, 16; died, 80.

Clement has also shown that out of one hundred of his cases of phthisis with fatal terminations, 87 gave continuous positive reaction.

NEW STAINS FOR GONOCOCCUS.

Pick's stain for gonococcus consists of Ziehl's carbol-fuchsin, 15 drops; concentrated alcoholic solution of methyl blue, eight drops; distilled water, 20 Cc. Stain cold for ten seconds, wash, dry and mount. The gonococcus is stained deep blue, other bacteria light blue, cell nuclei lighter blue, protoplasm pink. Lanz's stain consists of saturated solution of fuchsin in two per cent aqueous phenol, 10 Cc., saturated solution of thionin in two per cent aqueous phenol, 30 Cc. Mix, stain for fifteen to thirty seconds, and wash with water. Gonococci are stained by thionin, and nuclei take both colors. Both solutions should be freshly prepared.—*Inter. Med. Mag.*



CLINICAL SURGERY AND SURGICAL PATHOLOGY.

In Charge of T. H. MANLEY, M. D., New York.

APPENDICITIS AS A COMPLICATION OF PREGNANCY.

BY M. PINARD.

(Bull. de l'Académie de Médecine, du 6 Mars, 1900.)

In France of late years, appendicitis as a complication of various pathological conditions has been extensively studied, notably that phase of it complicating pregnancy; yet there is little literature on the subject, and hence why it was thought that these following cases might be of more than passing interest.

During the latter part of last year I was called to see a young woman, who, the attending physician said, had general peritonitis, from *rupture of the uterus*. On examination I was soon convinced that the case was not one of uterine rupture, but perforation of the appendix. Now the case was advanced and toxæmia was pronounced. Labor had begun and was soon completed, when a healthy, vigorous child was delivered. Immediately after, a laparotomy was performed, when the peritoneal cavity was found filled with pus, the intestinal coils were glued together and covered with false membrane. The appendix was largely opened by a gangrenous ulcer near its cæcal end. It contained a concretion the size of a haricot. The patient sank $3\frac{1}{2}$ hours after operation, and three days after the symptoms set in. I say three days after the symptoms set in because on Friday this young woman ate a hearty dinner. During the same night she was seized with violent pains in the abdomen, followed by vomiting. A physician was called, who said she had "indigestion." For the remainder of the day she had nausea and pain. Saturday night the pain became extremely

acute, when the physician was again called and found that labor had begun. Sunday was passed in great distress, when it was found that the pulse was 120 and the temperature 39.3° . Labor was in progress, and now the case was set down as "rupture of the uterus, with peritonitis."

Not long after I was called to see a young woman two months pregnant, who, it was said, six days before was seized with "indigestion" and was menaced with abortion. The pains yielded to opium and leeches to the abdomen, but tympanitis, with vomiting, high fever and quick pulse, gave rise to serious apprehension. On my arrival I found the young woman with all the signs of advanced appendicitis; she was in the moribund state and passed away in a few hours.

Pinard cites four other cases of appendicitis complicating pregnancy; one reported by Tillaux, a patient, 29, in sixth month of pregnancy; appendix quite entirely gangrenous and deeply lodged. Patient confined day after operation; made a good recovery.

Second case, Beaujon maternity. Three months pregnant. Seized with violent pains in right side, fever and vomiting; abdomen ballooned.

M. Segond operated on fourth day after the seizure. Appendix healthy, except at its perforated tip. Fourth day after operation aborted. Finally made a good recovery.

Same surgeon reported a similar case in Baudeloque—Maternity, with recovery, after operation.

Ferrier records a case of appendicitis in a patient, 29 years. Four months pregnant, with symptoms of intestinal occlusion. Appendix removed, with recovery following.

CONCLUSIONS BY THE AUTHOR.

(1) Appendicitis may develop in any stage of pregnancy.

(2) Appendicitis now may have a very insidious onset, and suddenly take on symptoms of extreme gravity.

(3) Early operation offers the only chance of recovery.

(4) In many cases presenting desperate features, courageous intervention will often save them from the very jaws of death.

Early and accurate diagnosis is usually possible. On this all depends. The fundamental symptoms of appendicitis are not seriously masked by disturbances or accidents of pregnancy. Chill, vomiting, with fever, ballooning of the abdomen, and pain over McBurney's point, are ominous signs.

NOTE.—M. Pinard says that during the past twenty-five years every case of appendicitis that he has seen complicating pregnancy treated by medicaments has proven mortal.

Appendicitis and its many complications demands the most serious study of every practitioner, for of all acute abdominal lesions, this most dreaded is often the most insidious in its onset and baneful in its consequences. So many other pathological conditions simulate it, in its onset, that not infrequently the most skilled diagnostician is baffled in its detection. Not only is it a frequent source of peritonitis, but the worm-like body may sink into the pelvis and light up serious pelvic suppuration, and again

mount up and seize on the liver or infect the pleura through the diaphragm. This Dieulafoy and others have recently demonstrated, and the writer has lately encountered two cases of massive hepatic abscesses of the liver of an appendicidal origin, one only detected on autopsy and the other was mistaken for empyema.

T. H. M.

THE TREATMENT OF CATARRHAL CONJUNCTIVITIS.

BY MILTON P. CREEL, M. D., CENTRAL CITY, KY.

Either as it appears as a simple catarrhal inflammation of the conjunctiva, affecting one individual or when it is encountered in an epidemic, there is no doubt but that catarrhal conjunctivitis is an affection of great importance. This affection is essentially simple, but if allowed to go along without correct treatment it may terminate in entire loss of vision. However, if the affection be given proper and timely attention it yields with great readiness to treatment.

Either as simple catarrhal conjunctivitis seen in a single individual, or when the affection manifests itself in the epidemic form, the treatment is essentially the same. Of course, individual peculiarities in each case make certain indications fitting and even imperative. One thing which a large experience with the disease has taught me is, that prompt and systematic treatment must be instituted in every case. Often patients with strumous diathesis will have chronic conjunctivitis, and persons whose health is poor will also have protracted forms of the affection, with the loss or great impairment of sight, when if proper and timely treatment had been instituted, a cure could have been effected within a very short time. In the treat-

ment of catarrhal conjunctivitis there have been many mischievous measures brought to bear.

All and everything which produces irritation will render all the elements in the case worse. We must never employ strong solutions. A lotion composed of 10 grains of sulphate of zinc to an ounce of distilled water will aggravate any case. All lotions must of necessity be mild and soothing.

As a curative means I have come now to rely on what I term the antiseptic treatment. This has been productive of better results in my hands than the old-time remedies.

In carrying out this treatment I first have the nurse to bathe the eyes thoroughly with this antiseptic mixture:

Hydrozone, 2 drachms.

Aqua, p. s. ad 4 ounces.

This mixture is used three or four times daily, as the case may appear to demand. Just as often as this mixture has been copiously applied and the eyelids have been dried I apply, by means of an ordinary glass medicine dropper, two drops of Marchand's Eye Balsam.

This remedy reaches every part of the conjunctiva by the movements of the lids, and it is not irritating; the patient generally makes rapid progress to recovery.

By this treatment I have found my patients to recover in from thirty-six hours to three days. In fact my success has been such that I now rely

upon this treatment entirely in this affection.

Four months ago an epidemic of catarrhal conjunctivitis broke out in a boarding school. I was called and ordered these remedies used on every case that presented itself. The nuns told me that all the cases got well speedily.

Mr. Samuel S., age 39. This patient had been suffering, as he put it, with "sore eyes" for three days. It was a simple case of catarrhal conjunctivitis, but gave him great discomfort. On the treatment described above he entirely recovered in two days.

Mrs. Laura S., aged 22. This patient thought she had something in her eye, but examination revealed catarrhal conjunctivitis. On this treatment she made a speedy recovery.

These are only two of the several hundred cases treated on the antiseptic principles.—*Medical Summary.*

A HUMAN BEING is easily distinguished from other animal creation, but when it comes to determining one human being from another there is occasional difficulty. Such cases are experienced in our criminal courts and occasionally in commercial and social life. This should not seem strange when we realize that there are about one and one-half billions of people on the face of the earth. It is not strange under such circumstances, that two or more should resemble each other.

